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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,791	06/06/2006	Mark Lawrence Williams	1033963-000025	5493

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EXAMINER	
ANDREWS, LEON T	
ART UNIT	PAPER NUMBER
2462	

NOTIFICATION DATE	DELIVERY MODE
01/05/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/581,791	WILLIAMS, MARK LAWRENCE	
	Examiner	Art Unit	
	LEON ANDREWS	2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1,3-6,8 and 9* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,3-6,8 and 9* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. **Claims 1 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted Prior Art (hereinafter APA) of the application, Williams (Pub. No.: US 2008/0310426 A1) in view of Rui et al. (Pub. No.: US 2004/0220769 A1).

Regarding Claims 1 and 5, APA discloses a network and a method for estimating a system state, the network comprising a plurality of nodes, each node having means for receiving and sending information and means for processing information, and each node being connected to selected other of the network (network where each node is connected for receiving and transmitting to other neighbouring nodes including the processing of information at each node and an estimate of the system state is maintained, [0003], [0008], page 1, lines 3, 1-6), each node including:

particle filter means for maintaining a set of particles and associated weights, which represent an estimate of the system state, and means for updating the set when new information is available (particle filter where set of particles representative of system state where weight is assigned to each particle and estimate of the state is by the weighted particles with update at time of availability, [0003], page 1, lines 1-14),

means for representing the estimating system state as a mixture of Gaussian distributions, and means for communicating said mixture to neighbouring nodes (set of particles representative of a system state where the state with observations have Gaussian function, and the network

wherein each node receives and transmits information to neighbouring nodes, [0004], [0008], page 1, lines 1-5, 1-4),

said means for updating, being responsive to receiving said mixture from a neighbouring node, for updating its estimate of the system state (update at time the system becomes available to update the particles representative of the system state where weight assigned to each particle and an estimate of the state obtained by the particles distribution function with the particle filtering by means of observation with sensors have the Gaussian measurement function and processing carried out at the nodes and exchanged between neighbouring nodes, [0003], [0004], [0012], page 1, lines 3-16, 1-5, 2-5) by computing new weights for each particle using a resampling operation, wherein each new weight includes said mixture of Gaussian distributions communicated to the node divided by said mixture of Gaussian distributions representing the existing particle set at said node (update resampling particles with weight where the particle have Gaussian measurement function and new weights are assigned to each particle according to the state given in the measurement calculated in the phase with the particle processing carried out at the node, [0003], [0004], [0012], page 1, liens 13-16, 1-13, 2-5).

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APA fails to specifically disclose estimated state as a mixture of Gaussian distribution.

But, the Rui et al. discloses estimated states are in the form of Gaussian distribution, paragraph [0012], page 2, lines 1-5.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Rui et al.'s limitation because this would have allowed the state estimates to be in the form of Gaussian distribution, paragraph [0012], page 2, lines 4-5.

2. **Claims 3 and 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted Prior Art (hereinafter APA) of the application in view of Rui et al. and Mookerjee et al. (Patent No.; US 7,180,443 B1).

Regarding Claims 3 and 8, APA discloses the network and a method, wherein said means for communicating transmits each Gaussian distribution of said mixture as signals representing the mean and covariance of the distribution.

The combination of APA and Rui et al. fails to specifically disclose Gaussian distribution defined to have covariance achievable by the weighting the states with measurement at each update, column 9, lines 14-23, Fig. 3, 326, update state estimate, covariance.

But, the Mookerjee et al. discloses Gaussian distribution defined to have covariance achievable by the weighting the states with measurement at each update, column 9, lines 14-23, Fig. 3, input covariance 316, update state estimate, covariance 326.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Mookerjee et al.'s limitation because this would have allowed the Gaussian distribution defined to have covariance, column 9, lines 14-20.

Regarding Claim 9, APA discloses the network as claimed in claim 5, wherein each node is a sensor (each node corresponds to a senor, [0012], page 1, lines 3-4) for tracking aircraft.

The combination of APA and Rui et al. fails to specifically disclose node for tracking aircraft.

But, the Mookerjee et al. discloses Fig. 1, tracking system tracks an aircraft target 12 using a radar system (sensor), column 1, lines 18-20.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use APA's limitation because this would have allowed the radar system (sensor node) to track an aircraft, column 1, liens 18-19.

3. **Claims 4 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted Prior Art (hereinafter APA) of the application in view of Rui et al. and Behroozi (Pub. No.: US 2005/0226179 A1).

Regarding Claims 4 and 6, APA et al. discloses the network and method, wherein a communication port of each node includes a channel filter.

The combination of APA and Rui et al. fails to specifically disclose node includes channel filter.

But, Behroozi discloses node includes channel filtering, [0025], page 2, lines 1-2.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Behroozi's limitation because this would have allowed the node to provide filtering of the signal, [0025], page 2, lines 8-10.

Response to Arguments

4. Applicant's arguments filed October 12, 2011 have been considered as follows:

- In the remarks on pages 7-9 of the amendment, applicant contends that the APA or the secondary prior art fails to disclose or suggest estimates are updated by dividing the Gaussian distribution from the neighbouring node by the Gaussian distribution from the existing particle in the node.
- The examiner respectfully maintains prior prosecution and further clarifies that APA discloses Gaussian measurement function update particle by resampling where weights are assigned to each particle with an estimate obtained by the weight of the particles, wherein new particle is generated from the old particle in proportional (dividing) to the weights whereby each node is connected to receiving and processing information of neighboring node, [0003], [0004], [0008], page 1, lines 4-16, 5-13, 2-4

Conclusion

5. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON ANDREWS whose telephone number is (571)270-1801. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon Andrews/
Examiner, Art Unit 2462
December 18, 2011

/Kevin C. Harper/
Primary Examiner, Art Unit 2462